

AKD 87

What is claimed is :

1. A punching machine comprising:
a work head having a ram and a tool and moving in a direction of axis Y on a body frame;
a first work movement positioning apparatus mounted at one side in a direction of axis X in a movable area of the work head in order to move and position the work in the direction of axis X; and
a second work movement positioning apparatus mounted at the other side in the direction of axis X in order to move and position the work in the direction of axis X.
2. The punching machine of claim 1, wherein the first and second work positioning apparatuses comprise a carriage for axis X having a plurality of work clamps, a feed screw for moving a nut member integrated with the carriage for axis X, and a drive motor for rotating the feed screw, respectively.
3. The punching machine of claim 2, further comprising: a clutch mounted on the body frame so that the feed screws are engaged and disengaged by the clutch.
4. The punching machine of claims 2 or 3, further comprising: a plate holding clamp mounted on the body frame for holding the work.
5. A method of punching, in a punching machine having a work head including a ram and a tool and moving in a direction of axis Y on a body frame, a first work movement positioning apparatus mounted at one side in a direction of axis X in a movable area of the work head in order to move and position the work in the direction of axis X, and a second work movement positioning apparatus mounted at the other side in the direction of axis X in order to move and position the work in the direction of axis X, the method comprising the steps of:

positioning the work by the first work movement positioning apparatus in order to punch the work; and next
moving the work from the first work movement positioning apparatus to the second work movement positioning apparatus so that the work is positioned by the second work

movement positioning apparatus in order to continue punching the work.

6. The method of claim 5, further comprising the step of: holding the work by the first and second work movement positioning apparatuses in order to punch the work.

7. The method of claim 5, further comprising the step of: repeating positioning the work alternately by the first and second work movement positioning apparatuses in order to punch the work.

8. The method of claims 5 or 7, further comprising the step of: positioning the second or first work movement positioning apparatus to a work holding stand-by position while the work is held by the first or second work movement positioning apparatus in order to punch the work.

9. A method of punching, in a punching machine having a work head including a ram and a tool and moving in a direction of axis Y on a body frame, a first work movement positioning apparatus mounted at one side in a direction of axis X in a movable area of the work head in order to move and position the work in the direction of axis X, and a second work movement positioning apparatus mounted at the other side in the direction of axis X in order to move and position the work in the direction of axis X, the method comprising the steps of:

positioning the work by the first or second work movement positioning apparatuses in order to bore the work when the work is moved forward in the direction of axis X; and next

forming the work when the work is moved backward in the direction of axis X.